plant, arise clockwise in some plants and counter-clockwise in others. I think that *Isoetes* affords similar evidence; but I have not been able to satisfy myself on this point.

The rootstock of the yellow waterlily (*Nuphar*) shows in its leaf-scars the order of development of the leaves to be distinctly antidromic as between two segments borne by the same stock; in the specimen before me the leaf-scars on the mother stock and on the right arm of the Y-like rootstock are arrranged in sinistrorse order, whilst those on the left arm are dextrorse. The following extract from a letter sent by my young friend, Professor Francis E. Lloyd, of Pacific University, Oregon, is very interesting, as it gives a connecting link between the antidromy of *Liquidambar* and that of rootstocks,—"I find that *Acer circinatum*, a plant o very singular habit, shows antidromy as between branch and branch in dichotomy. I am not sure of any observations. The plant is a shrub or small tree, and branches dichotomously with great regularity and the two branches of the Y twist to the right and left respectively." This is precisely as in the rhizome of *Helonias*. Professor Lloyd promises to report his observations; and I hope he will extend them to other plants on the Pacific coast.

PRINCETON COLLEGE, May 19, 1896.

New Species of Fungi from Mississippi.

BY S. M. TRACY AND F. S. EARLE.

In the BULLETIN for May, 1895, the writers described a number of new species of parasitic fungi, nearly all of which had been collected in Mississippi. During the past year we have identified a number of additional species, which are described here. Type specimens of all are in the herbaria of the authors, and of nearly all in the herbaria of the Department of Agriculture, Rutgers College, and Columbia and Harvard Universities.

CERCOSPORA CORNICOLA n. sp.

Epiphyllous, on irregular brown deadened spots without a definite border, 5–10 mm. Hyphae densely clustured from a nodular base, very short, continuous, somewhat flexuous, olivaceous, 11–15 by 3–4 μ; conidia slender, thread-like, somewhat

curved, mostly continuous, hyaline or light olivaceous, 60–70 by 2–3 μ.

On languishing leaves of *Cornus florida;* Ocean Springs, Miss., September 29, 1895.

CERCOSPORA GLOTIDIICOLA n. sp.

Forming greenish black definite areas. Hyphae in small fasciculate clusters from a nodular base, 1–2-septate near the base, fuliginous, somewhat flexuous or geniculate, 50–70 by 5–6 μ; conidia slender, clavate, hyaline, faintly 2–5-septate, 70–80 by 2-4 μ.

On ripening legumes of *Glotidium Floridanum* with *Macrosporium Floridanum.* Ocean Springs, Miss., September 25, 1895.

CERCOSPORA MINIMA n. sp.

Epiphyllous, on brown irregular indeterminate areas. Hyphae densely caespitose, very short, continuous, flexed and irregular, olivaceous, about 10–15 by 4 μ; conidia thread-like, hyaline, faintly septate, 40–60 by 2 μ.

On *Pyrus communis*, Biloxi, Miss., September 2, 1895.

CERCOSPORA MYRICAE n. sp.

Epiphyllous, on dark brown indeterminate areas. Hyphae densely caespitose from a common nodular base, flexuous, 1–2-septate, light fuscous, 30–40 by 3–4 μ; conidia narrowly clavate, faintly several septate, hyaline, 100–125 by 3 μ, occasionally 175 μ long.

On *Myrica cerifera* var. *media*, Ocean Springs, Miss., September 15, 1895, and March 7, 1896.

CERCOSPORA SEPTATISSIMA n. sp.

Amphigenous, at first forming dark olivaceous angular areas bounded by the veins, at length widely effused; hyphae densely caespitose, irregularly bent and flexed, dark fuscous, distinctly many-septate, 40–60 by 5–6 μ, the septa usually only 4–6 μ apart; conidia slender, clavate, faintly septate, hyaline, 50–60 by 3–5 μ.

On *Verbena Caroliniana*, Columbus, Miss., October 12, 1895.

CERCOSPORA STYLISMAE n. sp.

Amphigenous, spots 2–3 mm. wide, white, surrounded by a dark raised border; hyphae in small slightly divergent clusters, nearly straight, fuscous-olivaceous, uniseptate near the base, 40–50 by 5–6 μ; conidia clavate, hyaline, faintly 3–5-septate, 50–70 by 4–5 μ.

On *Stylisma humistrata*, Columbus, Miss., October 16, 1895.

GLADISPORIUM XYRIDIS n. sp.

Blackening the persistent withering petals. Mycelial threads

effused, slender, not nodular, branching, occasionally septate, fuliginous, 3–4 μ in diameter; conidia oval or somewhat fusiform, lighter colored than the mycelium, at length uniseptate, 7–10 by 4–5 μ.

On *Xyris fimbriata*, Ocean Springs, Miss., September 29, 1895

GLONIUM MACROSPORIUM n. sp.

Perithecia scattered, black, carbonaceous, broadly oval, obtuse' indistinctly longitudinally striate, lips closely connivent, about 1 mm. long; asci cylindrical, thin-walled, 8-spored, paraphysate, about 200 by 35–40 μ; sporidia very long, cylindrical, slightly curved, obtuse, unequally uniseptate, somewhat constricted, hyaline or at length slightly tinted, 60–70 by 12–15 μ.

On dead twigs of *Persea palustris*, Ocean Springs, Miss., May 26, 1895.*

The spores are twice as large as in any described species of *Glonium*. It approaches *Tryblidium* in its occasionally tinted spores, and there is one species, *T. turgidulum* P. & H. with spores even slightly larger than these.

HELMINTHOSPORIUM GENICULATUM n. sp.

Blackening the spikelets. Hyphae thinly effused, flexuous, nodular, septate, dark fuscous, 100–125 by 4–5 μ; conidia obtuse-fusiform, usually 4-septate, fuscous, central cell darker, apical cells lighter and nearly hyaline, usually abruptly geniculate on the enlarged central cell, 35–40 by 8–10 μ.

On *Eragrostis rachitricha* grown from imported seed, Starkville, Miss., October, 1894.

LEMBOSIA OLEAE n. sp.

Hypophyllous, spots none; perithecia scattered, large, flexuous and often branched or compound, about 400 by 80–100 μ; subiculum abundant, of long slender fuscous branching matted threads, 100 or more by 2–2.5 μ; sporidia unequally uniseptate, the shorter cell narrower, hyaline (but evidently immature), 12–15 by 4 μ.

On leaves of *Olea Americana*, Ocean Springs, Miss., February 4, 1894, and September 19, 1895.

LEMBOSIA ANDROMEDAE n. sp.

Hypophyllous, without definite spots; perithecia scattered or gregarious, linear and occasionally flexed, seldom branched, 250–400 by 50–90 μ; subiculm copious, of loosely interwoven and anastomosing fuscous threads, 25–40 by 2–3 μ; spores unequally

* Also found at Auburn, Ala., on various dead twigs. February, 1886.

uniseptate, oval or biconic, hyaline (perhaps immature), 8–9 by 2.5–3 μ.

On leaves and stems of *Andromeda nitida*, Ocean Springs, Miss., May 26, 1895.

This resembles *L. Oleae* in its hypophyllous growth, lack of spots or evident mycelium, and in its elongated stipitate asci, but it averages smaller and narrower, and has a less abundant and very different appearing subiculum. The two species seem to form a natural section or subgenus quite different from the other species, which are epiphyllous on more or less distinct spots, and with broadly oval or orbicular asci.

LEMBOSIA CLIFTONIAE n. sp.

Epiphyllous, on small irregularly rounded whitened areas 1–2 mm. in diameter; perithecia small, oval or linear-oval, usually straight and simple, rather thick and dense, 100–150 by 40–70 μ; subiculum very scanty or almost wanting, of few dark colored nodular flexuous threads, 15–25 by 2–3 μ; asci obovate, 20–25 by 10–15 μ; sporidia oval or biconic, about equally uniseptate, light fuligenous, 9–11 by 4–5 μ.

On living leaves of *Cliftonia ligustrina*, Ocean Springs, Miss., September 14, 1895.

LEMBOSIA ILICIS n. sp.

Epiphyllous, on ash-colored spots 3–5 mm. in diameter; perithecia usually linear and simple, rarely branched, 200–300 by 70–80 μ; subiculum of numerous slender fuscous threads, 15–20 by 2–3 μ; asci oval or oblong, not sipitate, 20–25 by 10–12 μ; sporidia elliptical, about equally uniseptate, slightly constricted, becoming olivaceous, 8–10 by 2.5–3 μ.

On living leaves of *Ilex glabra*, Ocean Springs, Miss., August 25, 1895.

The microscopic characters are much as in *L. angustiformis* T. & E. on *Ilex coriacea*, but the sporidia are even smaller and more delicate, the stellate blisters so characteristic of *L. angustiformis* are wholly wanting, and the gross appearance on the leaf is quite different.

LEMBOSIA RUGISPORA n. sp.

Epiphyllous, on irregularly rounded, dark brown spots covered with a radiating mycelium; spots 1–3 mm. in diameter; perithecia often stellately compound, or variously branched, about 400 by 100 μ when simple; subiculum rather scanty, of two kinds of

threads, one pale, multiseptate, about 3–3.5 μ thick, the other darker, mostly continuous, frequently anastomosing, 2.75–3 μ, the darker threads bear occasionally erect sessile 4–8 septate dark fuscous clavate conidia, 30–45 by 7–8 μ; they also bear occasional sessile orbicular one-celled dark opake bodies (hyphopodia?) 5–6 μ in diameter; asci oval, 25–35 by 20–25 μ, sporidia large, oval, about equally uniseptate, at length dark fuscous, 15–20 by 8–10 μ. When fully matured and freed from the ascus the surface of the sporidia is seen to be prominently roughened by small wart-like projections.

On living leaves of *Persea palustris*, Ocean Springs, Miss., May 26, 1895.

LOPHODERMIUM CYRILLICOLUM n. sp.

Amphigenous, on irregular brown sub-arid red-bordered spots; perithecia innate, depressed and finally collapsing, broadly oval, lips connivent, 1–1.5 mm.; asci cylindric-clavate, about 65–75 by 10 μ; paraphyses very numerous, thread-like, exceeding the asci, tips not recurved; sporidia filiform, nearly equalling the ascus, straight and parallel with it.

On living leaves of *Cryilla racemiflora*, Ocean Springs, Miss., November, 1894.

PESTALOZZIA UNISETA n. sp.

Acervuli scattered, erumpent, oval or elliptical, opening by an irregular elongated fissure, 50–100 by 100–200 μ; conidia elliptical, often somewhat curved, 5-septate, the four medial cells dark fuscous, terminal cells hyaline, 25–30 by 7–8 μ; arista single, hyaline, 8–10 μ long, abruptly bent at a sharp angle with the spore; stipe very short, bent to the same side as the arista.

On bark of "Prof. Gulley" grape, Starkville, Miss., March 16. 1896.

SCOLECOTRICHUM EUPHORBIAE n. sp.

Hypophyllous, forming prominent olivaceous tufts; spots none; hyphae very numerous, in large tangled clusters, long and flexuous, olivaceous, occasionally septate, marked for more than half their length by scars left by the pleurogenous conidia, 225–275 by 4–5 μ; conidia oval or obovate, with a distinct scar at the base, hyaline, minutely granular, continuous or at length faintly uniseptate, not constricted, 20–25 by 7–8 μ.

On *Euphorbia Preslii*, Starkville, Miss., Sept. 27, 1895. Also from Auburn, Ala., September, 1892 (Duggar).

This is placed here with considerable doubt, as the hyphae are quite different from those of any described species of *Scoleco-*

trichum, though the conidia appear to be typical. It is perhaps generically distinct, but rather than establish a new genus in this already overcrowded and confused group, we write it as above.

TILLETIA CORONA Scrib.

This striking smut was first observed by Scribner on *Homalocenchrus oryzoides* and *H. Virginicus* near Washington, D. C., in 1886, and specimens collected by him were distributed by Ellis under the above name in N. A. F., as No. 1896. It has since been collected by Waite in Illinois and Missouri on *Homalocenchrus*, on *Panicum virgatum* in Illinois, and by the writers in Mississippi on *Homalocenchrus lenticularis* and *H. Virginicus* at Columbus, on *H. lenticularis* at Bairds, and on *Panicum sanguinale* at Starkville. Specimens on *Panicum virgatum* in the herbarium of the Division of Vegetable Pathology at Washington bear the unpublished herbarium name *T. pulcherrima* Ell. and Gal., but they seem identical with the forms on the other hosts. As no description of this species has been published, we make the following, drawn from an examination of all the above mentioned material.

TILLETIA CORONA Scrib.

Infesting the ovaries, transforming them into black curved horn-shaped masses sometimes 1 cm. in length, the outer covering firm in texture, showing traces of the cellular structure of the ovary; spores large, spherical, 22–26 μ, dark fuscous and densely opake when mature, but covered with a hyaline envelope 2 μ or more in thickness, the surface of the dark central mass covered by minute but deep alveolations, this structure being obscured by the opacity of the mature spore, when the thin alveolar walls can be seen only at the periphery, where they appear like numerous spinous projections reaching almost through the hyaline envelope. The remains of the fruiting hyphae often persist on the younger spores as a false pedicel.

On various grasses, Mississippi, Illinois, Missouri and Washington, D. C.

Several other species of *Tilletia* have similar large spores with a hyaline outer covering, but in the others the spores are less dark and opake, and the alveolar reticulations are much larger and more easily recognized. These species form a natural group quite distinct from the other *Tilletias*, and might well be considered as constituting a distinct genus.

USTILAGO SPOROBOLI n. sp.

Infesting the ovaries, forming a hard greenish compact mass 2–3 mm. in diameter; spores dark fuscous, oval or subglobose; epispore thickly covered with broadly conical tuberculations, 12 to 12 by 15 μ.

On *Sporobolus junceus*, Columbus, Miss., October 12, 1895.

Usually but few infested ovaries occur on a plant, and the panicle retains its normal form.

WINTERIA LOBATA n. sp.

Hypophyllous, superficial; perithecia scattered, turbinate, collapsing to patellate, and becoming variously ridged and lobed on the thick margins, thin, fragile, not distinctly cellular, black externally and greenish blue within, 300–400 μ; asci numerous, thin-walled, ovate, short-pedicellate, about 35 by 15 μ, involved in the thread-like gelatinous greenish paraphyses; sporidia hyaline, narrowly elliptical, acute, faintly 3-septate.

On living leaves of *Ilex coriacea*, Ocean Springs, Miss., February 16, 1894, and August 20, 1895.

The February specimens seem slightly immature, so that the characters of the sporidia are made out with difficulty, and the August specimens appear to be entirely sterile. The same fungus has been detected with specimens of *Asterina peliculosa* on the same host collected in Florida by Th. Holm, and in Georgia by M. B. Waite.

ZIGNOELLA MAGNOLIEAE n. sp. (Subgenus Trematostoma).

On whitened areas, thickly scattered and sometimes confluent, hemispheric, base slightly sunk in the matrix, rounded above, not papillate, finally opening by a large round ostiolum, black, carbonaceous, surface roughened, about ½ mm. in diameter; asci narrowly elliptical, long-stipitate, 130–150 by 12–15 μ; paraphyses filiform, abundant, exceeding the asci; sporidia hyaline, elliptical, ends rounded, 4-guttate, finally 3-septate, not constricted, 22–24 by 5–6 μ.

On bark of dead *Magnolia glauca*, Ocean Springs, Miss., March 7, 1896.